CHAPTER 12: FLAT BED SCANNING SECTION

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– Short interval beeps when pressed
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– Short interval beeps when pressed

THEORY OF OPERATION

1. Scanner Table Setting System

- Basic

The Scanner table is pushed up by two Flat bed dampers when released from the hooks of the machine by holding the Open lever.

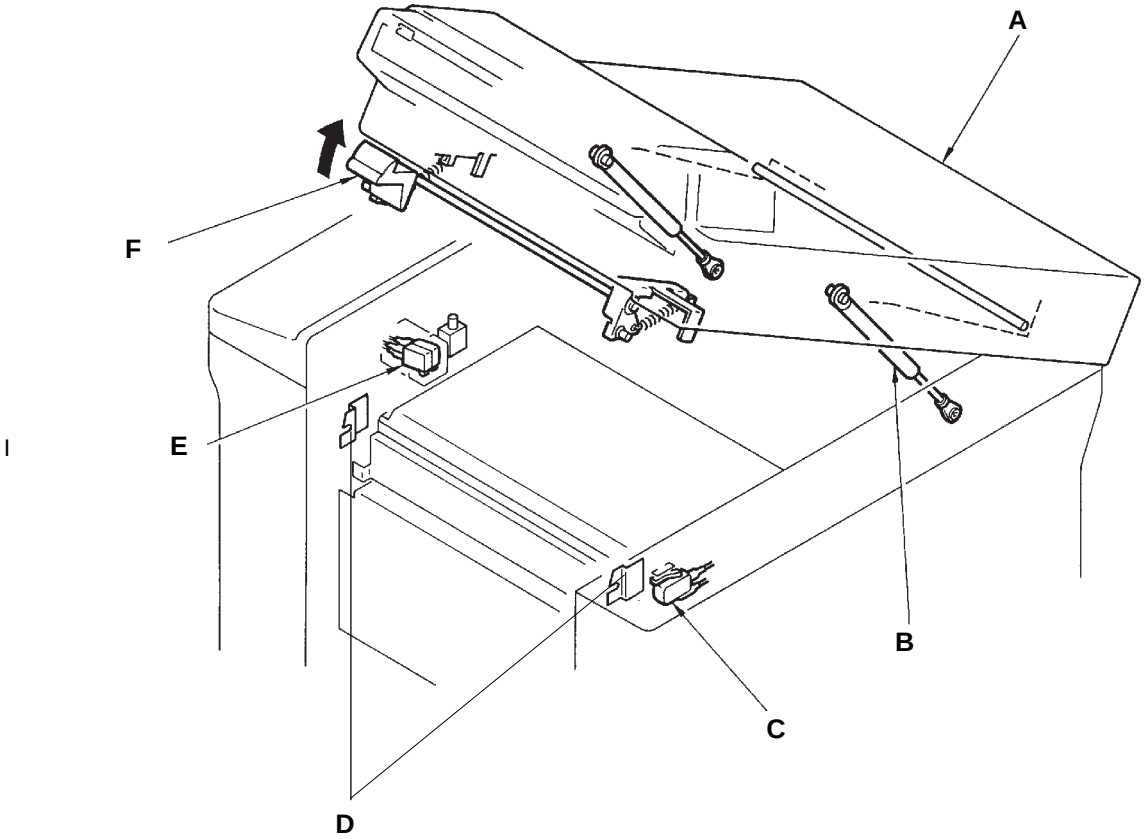
- Function of Flat Bed Set Switch

The Scanner table set switch detects whether the Scanner table is open or closed.

- Function of Interlock Switches

When the Scanner table is opened, the Interlock switches are released OFF, interrupting the power to the Main motor and Thermal print head.

A: Scanner table
B: Flat bed damper
C: Scanner table set switch
D: Hooks
E: Interlock switches
(for Main motor & Thermal print head)
F: Open lever



When the Scanner table set switch or Interlock switch is released OFF, the error message “CLOSE SCANNER TABLE” is displayed.

Flat bed PCB LED 1 Flat bed original detection sensor
– Light up when reflected light detected
Test Mode No.51 Stage cover sensor
– Short interval beeps when light path is blocked
No.52 Flat bed original detection sensor
– Short interval beeps when reflected light detected

2. Flat Bed Original Detection System

- Basic

When an original is placed on the Stage glass, the machine status is changed from "printing" to "master making".

- Function of Stage Cover Sensor

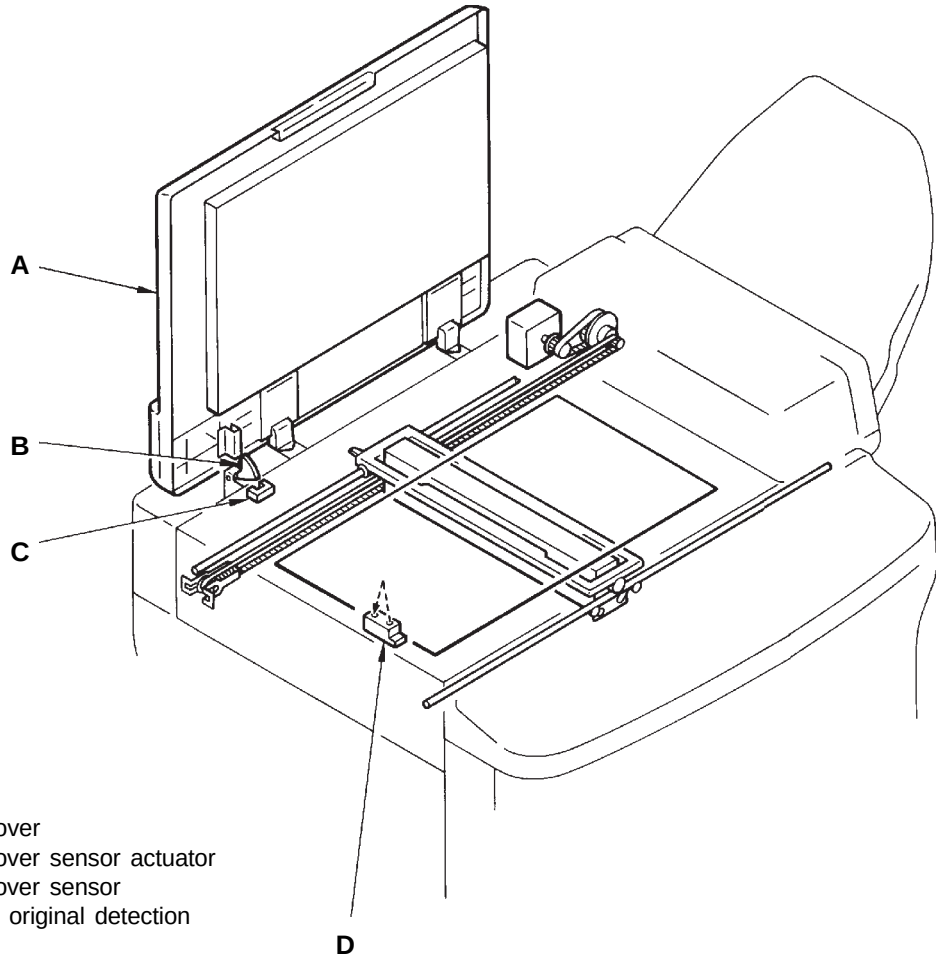
The Stage cover sensor checks whether the Stage cover is open or closed by checking its light path.

The light path of the sensor is blocked by the Stage cover sensor actuator when the Stage cover is closed more than halfway down.

- Function of Flat Bed Original Detection Sensor

When the light path of the Stage cover sensor is blocked, the Flat bed original detection sensor checks for the presence of an original on the Stage glass.

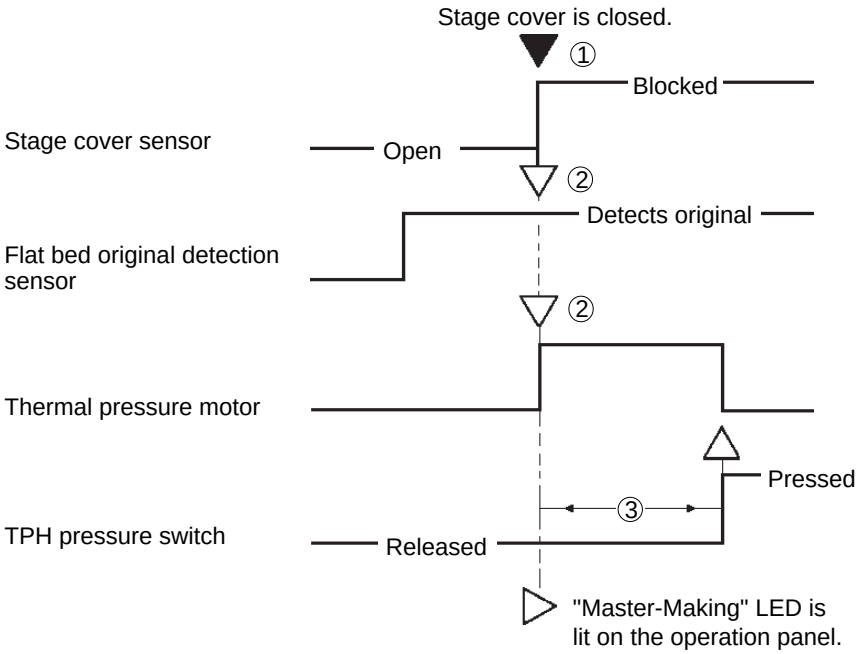
When the sensor detects an original on the Stage glass, the "Master-Making/Print" LED on the operation panel is changed from "Print" to "Master-Making" and the Thermal pressure motor is activated to lower the Thermal print head until the TPH pressure switch is pressed.



A: Stage cover
B: Stage cover sensor actuator
C: Stage cover sensor
D: Flat bed original detection sensor

- Timing Chart -

Flat Bed Original Detection System



① FB-ADF Original detection sensor is not pressed.
Both the ADF switch and Flat bed set switch are pressed.
② When the Flat bed original detection sensor detects an original, the Thermal presssure motor is activated to lower the Thermal print head until the TPH pressure switch is pressed.
③ If the TPH pressure switch is not pressed **within 4 seconds** after the TPH pressure motor is activated, it is assumed that the Thermal presssure motor has been locked and the message **[T 19]** is displayed.

3. Image Scanner Initial Movement System

- Conditions for Image Scanner Initial Movements

The Image scanner makes either of the two initial movements mentioned below in the following cases:

Initial Movement 1

1) The power is turned ON or "ALL RESET button is pressed without originals on the ADF tray.
2) The Book processing feature is cancelled.

Initial Movement 2

1) The power is turned ON or "ALL RESET button is pressed with originals on the ADF tray.
2) The ADF original detection sensor is actuated ON by placing originals on the ADF tray.
3) The Book processing feature is selected.

- Image Scanner Initial Movement 1

(i) If the Image scanner home position sensor is not detecting the bracket of the Image scanner, the Flat bed read pulse motor is activated to transfer the Image scanner to the left until the sensor detects the bracket.

(ii) If the sensor is detecting the bracket, the Image scanner stays still.

- Image Scanner Initial Movement 2

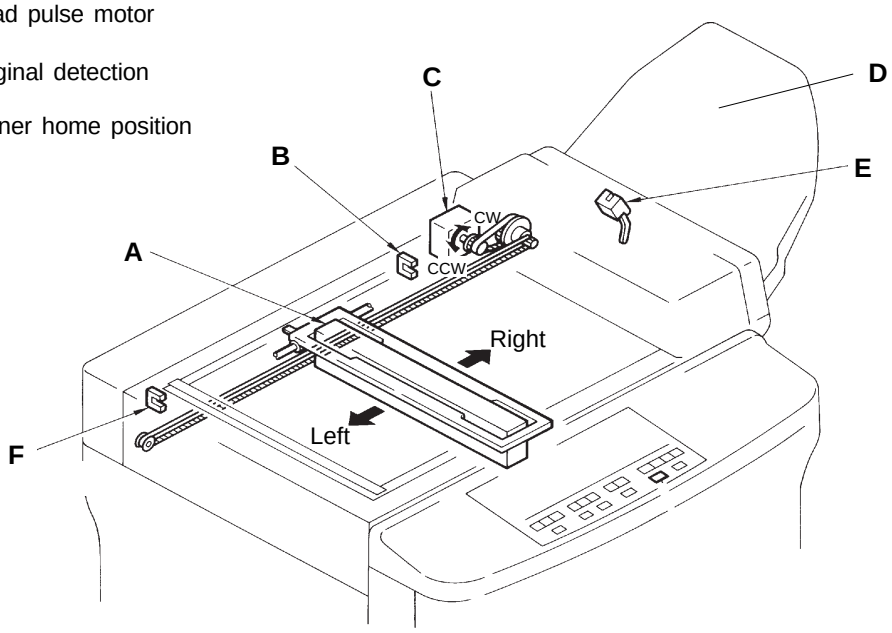
(i) If the Image scanner ADF shading sensor and Image scanner home position sensor are not detecting the bracket of the Image scanner, the Flat bed read pulse motor is activated to transfer the Image scanner to the left.

- If the Image scanner ADF shading sensor detects the bracket of the Image scanner **within 2204 pulses** after the Flat bed read pulse motor is activated, it is assumed that the Image scanner is located under the ADF unit and the Flat bed read pulse motor is stopped.
- If not, it is assumed that the Image scanner is located outside the ADF unit and the Flat bed read pulse motor starts to reverse after **10msec.** rest, to move the Image scanner to the right until the Image scanner ADF shading sensor detects the bracket of the Image scanner.

(ii) If the Image scanner home position sensor is detecting the bracket of the Image scanner, the Flat bed read pulse motor is activated to transfer the Image scanner to the right until the ADF shading sensor detects the bracket.

(iii) If the ADF shading sensor is detecting the bracket, the Image scanner stays still.

A: Image scanner
B: Image scanner ADF shading sensor
C: Flat bed read pulse motor
D: ADF tray
E: FB-ADF original detection sensor
F: Image scanner home position sensor



THEORY OF OPERATION

Test Mode No.49 Scnner home position sensor
– Short interval beeps when light path is blocked
No.50 Scanner ADF shading sensor
– Short interval beeps when light path is blocked
No.34 ADF original detection sensor
– Short interval beeps when pressed
No.108 FB/R Pulse motor continuous operation

- Timing Chart -

Image Scanner Initial Movement (1)

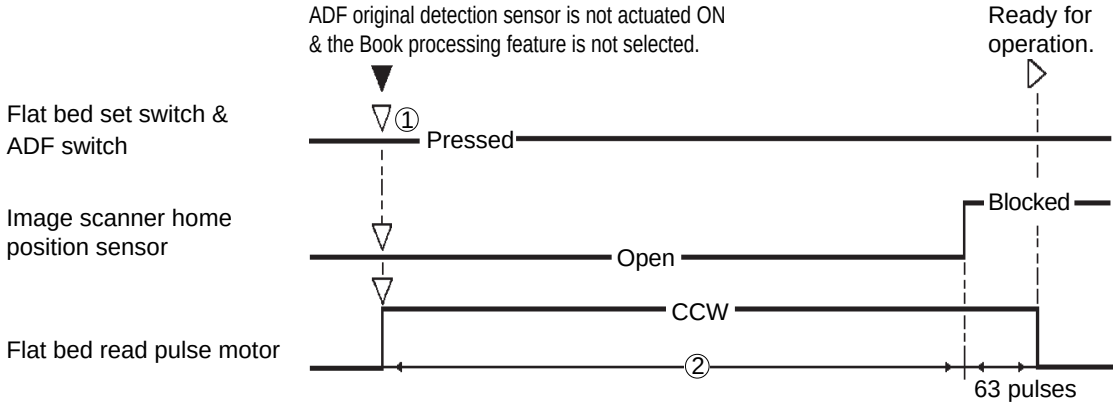
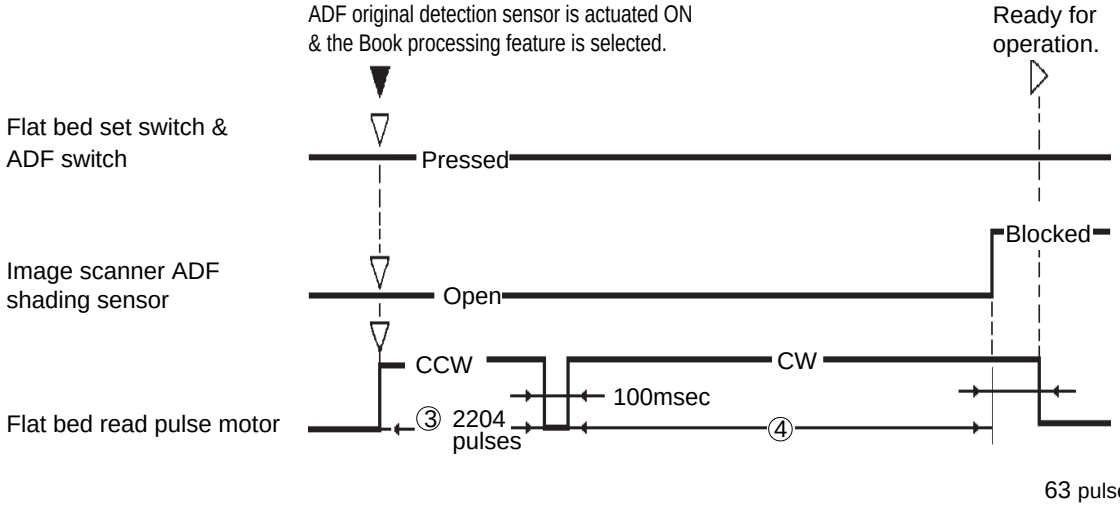


Image Scanner Initial Movement (2)



① If the Flat bed set switch is not pressed, the error message “CLOSE SCANNER TABLE” is displayed.
If the ADF switch is not pressed, the error message “CLOSE ADF COVER” is displayed.

② If the Image scanner home position sensor does not detect the bracket of the Image scanner **within 18898 pulses** after the Flat bed read pulse motor is activated (CCW), it is assumed that the Flat bed read pulse motor has been locked and the error code **[T 15]** is displayed.

③ If the Image scanner ADF shading sensor has detected the bracket of the Image scanner **within 2204 pulses** after the Flat bed read pulse motor is activated (CCW), the Flat bed read pulse motor is stopped after making additional **63-pulses** turns(CCW).
If the Image scanner home position sensor has detected the bracket of the Image scanner **within 2204 pulses** after the Flat bed read pulse motor is activated (CCW), the Flat bed read pulse motor rests for **100msec.**, and then reverses rotation (CW).

④ If the Image scanner ADF shading sensor has not detected the Image scanner **within 15748 pulses** after the Flat bed read pulse motor reverses rotation (CW), it is assumed that the Flat bed read pulse motor has been locked and the error code **[T 15**] is displayed.

* If the Flat bed read pulse motor is turned on for 800 pulses, the Image Scanner will move 1 inch(25.4 mm).(1 mm=31.5 pulses)

T15 (Flat Bed Read Pulse Motor Lock)
• Scanner home position not turned on • Scanner ADF shading sensor not turned on

4. Image Scanning System - in Auto Scanning Contrast Adjustment Mode

- Basic

The Image scanner is located at the Image scanner home position sensor, and the reading of the original background density starts after the shading compensation is made.

- Reading (Detection) of Original Background Density [AUTO BASE CONTROL]

By placing an original on the Stage glass and pressing the START button, the LEDs of the Image scanner are turned ON and the shading compensation is made.

200msec. later, the Flat bed read pluse motor is activated to move the Image scanner to the right.

598 pulses (19mm) after the Image scanner gets out of the Image scanner home position sensor, the Image scanner reads the original background density. This reading of the original background density is repeated twice, i.e. **81 pulses (2.57mm)** after the initial reading spot and **81 pulses (2.57mm)** after the second reading spot.

- Return Home of Image Scanner

10msec. after the third reading of the original background density is finished, the Flat bed read pulse motor starts to reverse rotation to return the Image scanner to the home position (at the Image scanner home position sensor).

- Start of Image Scanning

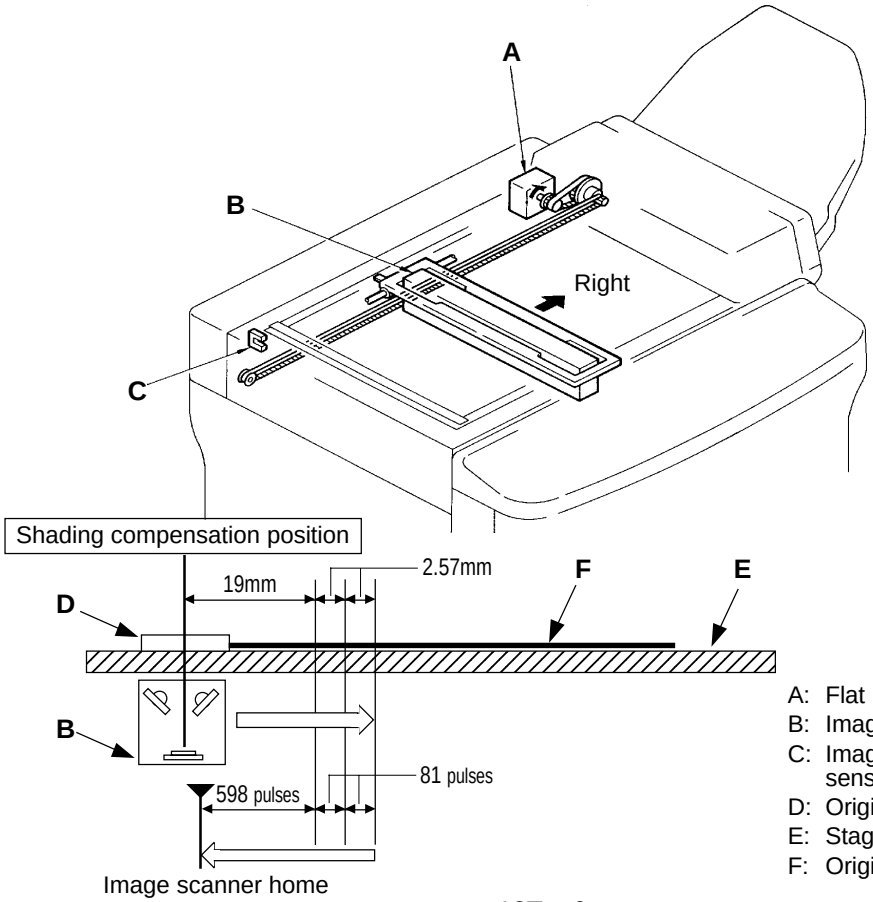
When the Image scanner returns to the home position, the Flat bed read pulse motor reverses the rotation, leading the Image scanner to start moving to the right again.

Subsequently, image is scanned in the same way as when scanning images without the Book processing feature.

- Availability of Auto Scanning Contrast Adjustment Mode

This functions only when the original read density is set to “AUTO.”

The Auto scanning contrast adjustment mode is not available when any of the following features is selected; Photo mode, Duo mode, Dot photo mode or Book processing feature.

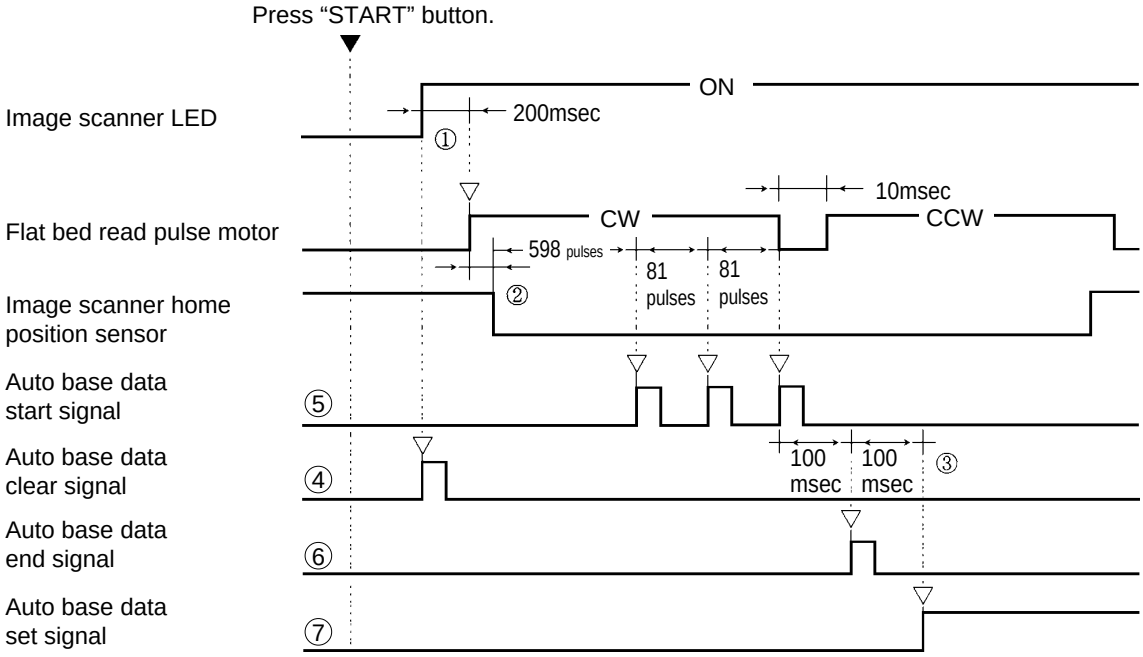


A: Flat bed read pulse motor
B: Image scanner
C: Image scanner home position sensor
D: Original stopper
E: Stage glass
F: Original

Test Mode No.49 Scnner home position sensor
– Short interval beeps when light path is blocked
No.79 Image scanner LED lighting

- Timing Chart -

Image Scanning System - in Auto Scanning Contrast Adjustment Mode



① The shading compensation is made automatically when the LEDs of the Image scanner are turned ON.
② If the Image scanner has not gone out of the Image scanner home position sensor **within 314 pulses** after the Flat bed read pulse motor is activated, i.e. the light path of the sensor has not been opened, it is assumed that the Flat bed read pulse motor has been locked and the error message **"T15 CALL SERVICE"** is displayed on the operation panel.
③ If the Auto base data set signal has not been turned ON 100 msec after the Auto base data end signal is output, the operation is interrupted after the Image scanner returns to the home position and the error message **"T10 TURN MAIN POWER SW. OFF THEN ON"** is displayed on the operation panel.
④ If the Auto base data clear signal is turned on, the previous Auto base data will be cleared.
⑤ If the Auto base data start signal is turned on, the image data will be taken in by the image scanner.
⑥ The Auto base data end signal is to signal the end of taking in the image data.
⑦ The Auto base data set signal is turned on when the Auto base data is stored.

T15 (Flat Bed Read Pulse Motor Lock)
• Scanner home position sensor not turned off

T10 (Image Precessing PCB Failure)
• Auto base data set signal not turned on

5. Image Scanning System - Without Book Processing Feature & ADF

- Basic

The Image scanner is located at the Image scanner home position sensor, and the scanning starts after the shading compensation is made.

- Start of Image Scanning

By placing an original on the Stage glass and pressing the START button, the LEDs of the Image scanner are turned ON and the shading compensation is made.

200msec later, the Flat bed read pluse motor is activated to move the Image scanner to the right.

472 pulses after the Image scanner goes off the Image scanner home position sensor, the Read & Write start signal is turned ON and the image scanning starts.

At the same time, the Master making and Master removal processes take place.

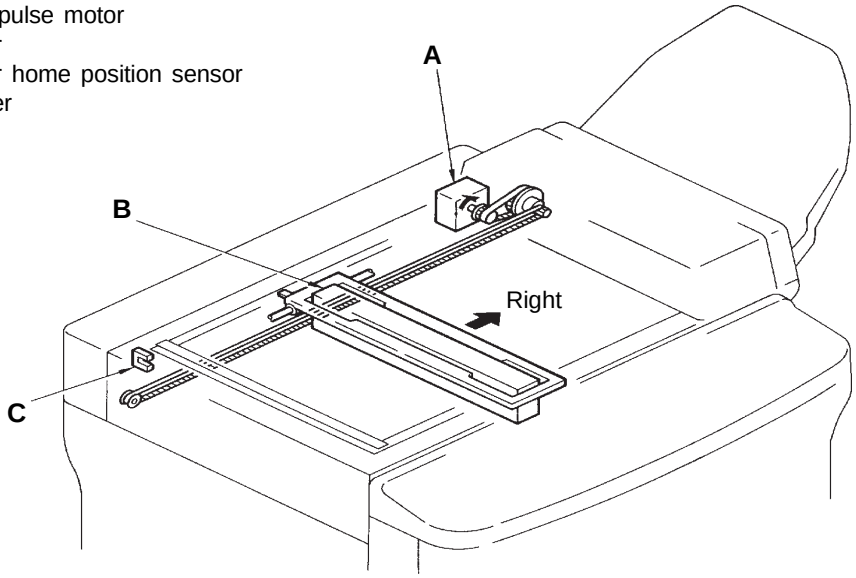
- End of Image Scanning

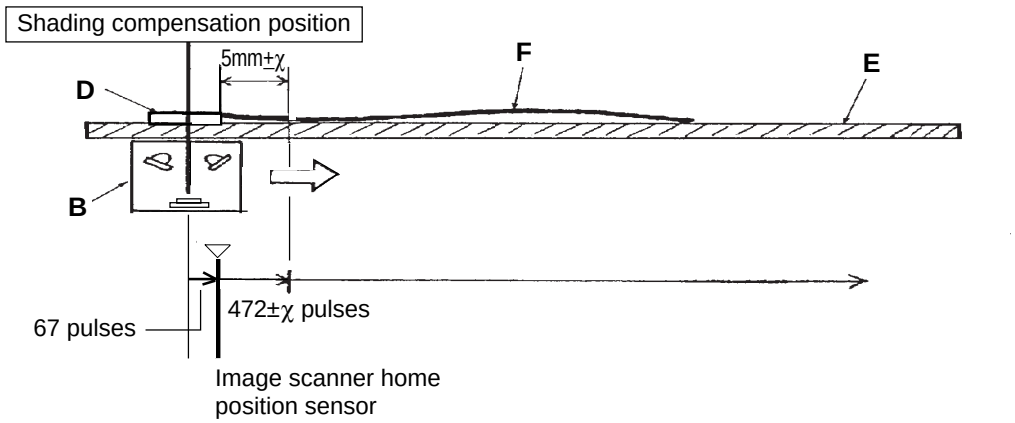
When a master is made for the size of the paper on the Paper feed tray, the Read & Write start signal and the Flat bed read pulse motor are turned OFF to end the image scanning process. When the Read & Write start signal is turned OFF, the master making process is also finished and a new-made master starts to be loaded on the Drum after confirming that a used master has been removed completely.

- Return to Home of Image Scanner

200msec after the Read & Write start signal is turned OFF, the LEDs of the Image scanner are turned OFF and the Flat bed read pulse motor starts to reverse rotation to return the Image scanner to the home position (at the Image scanner home position sensor).

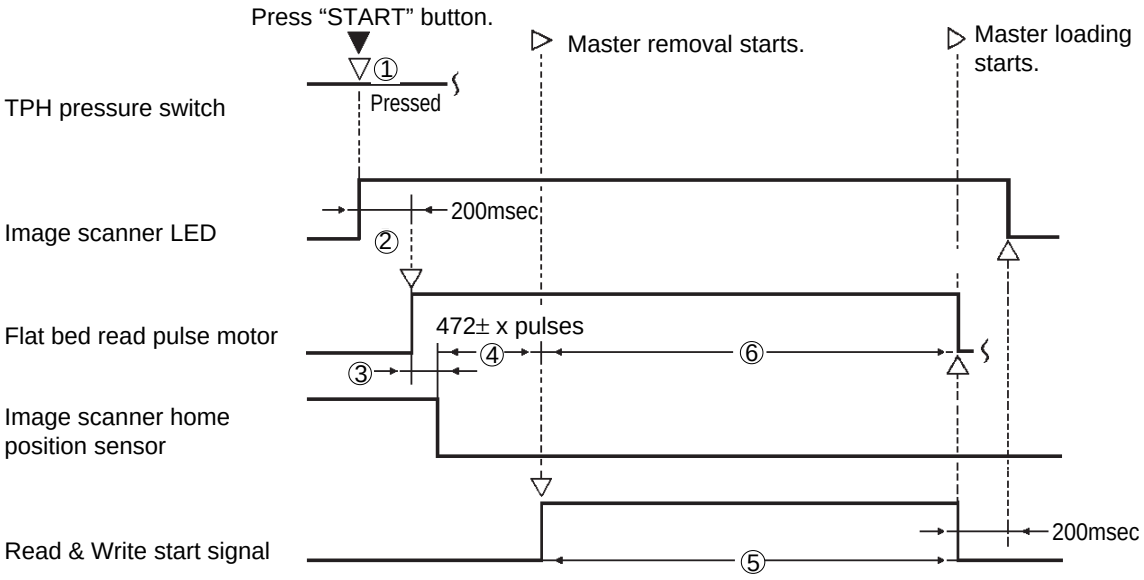
A: Flat bed read pulse motor
B: Image scanner
C: Image scanner home position sensor
D: Original stopper
E: Stage glass
F: Original





- Timing Chart -

Image Scanning System - Without Book Processing Feature & ADF



① If the TPH pressure switch is not pressed, the Thermal pressure motor is rotated until the switch is pressed.
The image scanning starts only after the TPH pressure switch is pressed.
② The shading compensation is made automatically when the LEDs of the Image scanner are turned ON.
③ If the Image scanner has not gone off the Image scanner home position sensor **within 314 pulses** after the Flat bed read pulse motor is activated, i.e. the light path of the sensor has not been opened, it is assumed that the Flat bed read pulse motor has been locked and the error code **[T 15]** is displayed on the operation panel.
④ The "x" pulse can be increased or decreased by Memory switch **No.213**.
⑤ The Read & Write start signal is turned OFF when a master is made for the size of the paper on the Paper feed tray.
⑥ If Read & Write start signal has not been turned OFF **within 13701 pulses** after it is turned ON, the signal and the LEDs of the Image scanner are turned OFF compulsively.

T15 (Flat Bed Read Pulse Motor Lock)
• Scanner home position sensor not turned off

6. Pre-Scanning System - With Book Processing Feature & Without ADF

- Basic

The Image scanner is located at the Image scanner ADF shading sensor, and the pre-scanning starts after the shading compensation is made.

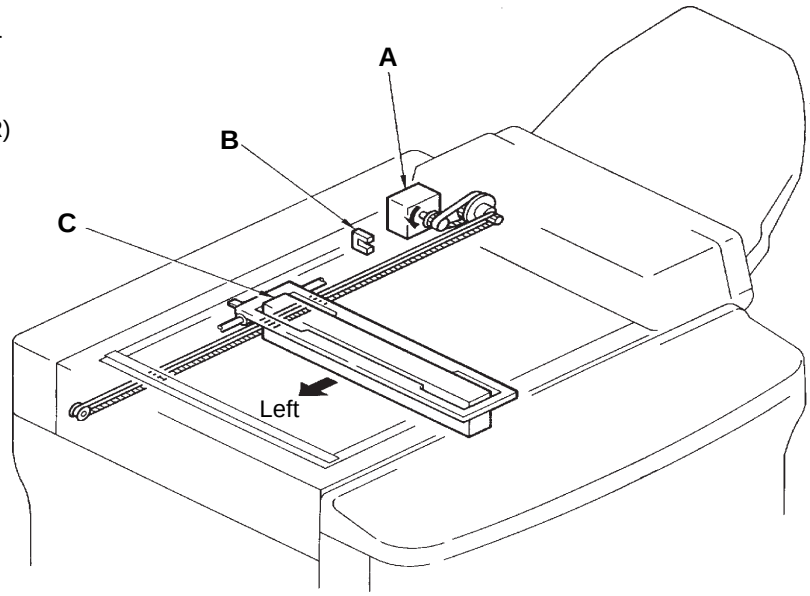
- Start of Pre-Scanning (Check of Original Size)

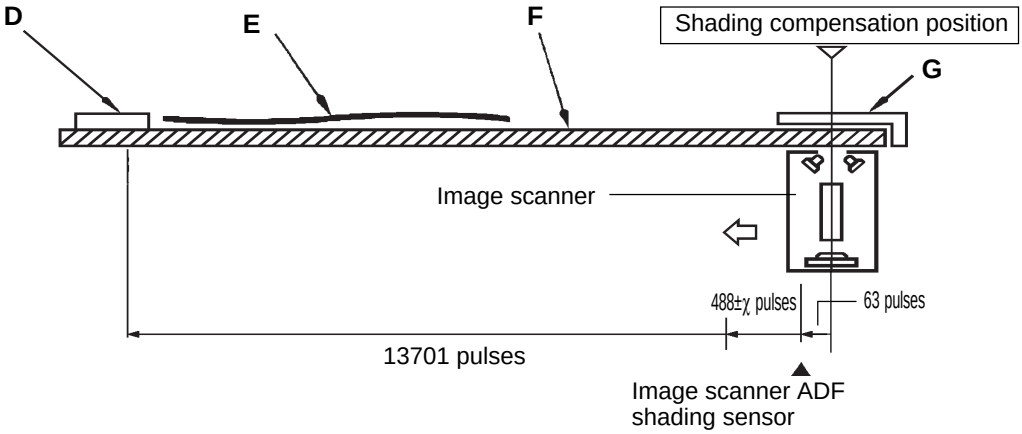
By placing an original on the Stage glass and pressing the START button, the LEDs of the Image scanner are turned ON and the shading compensation is made.
200ms later, the Flat bed read pulse motor is activated to move the Image scanner to the left.
488 pulses after the Image scanner goes off the Image scanner ADF shading sensor, the Image scanner starts to scan the original to find its size before scanning images.

- End of pre-Scanning

13701 pulses later, the Flat bed read pulse motor is deactivated to finish the pre-scanning operation and the image scanning process is started.

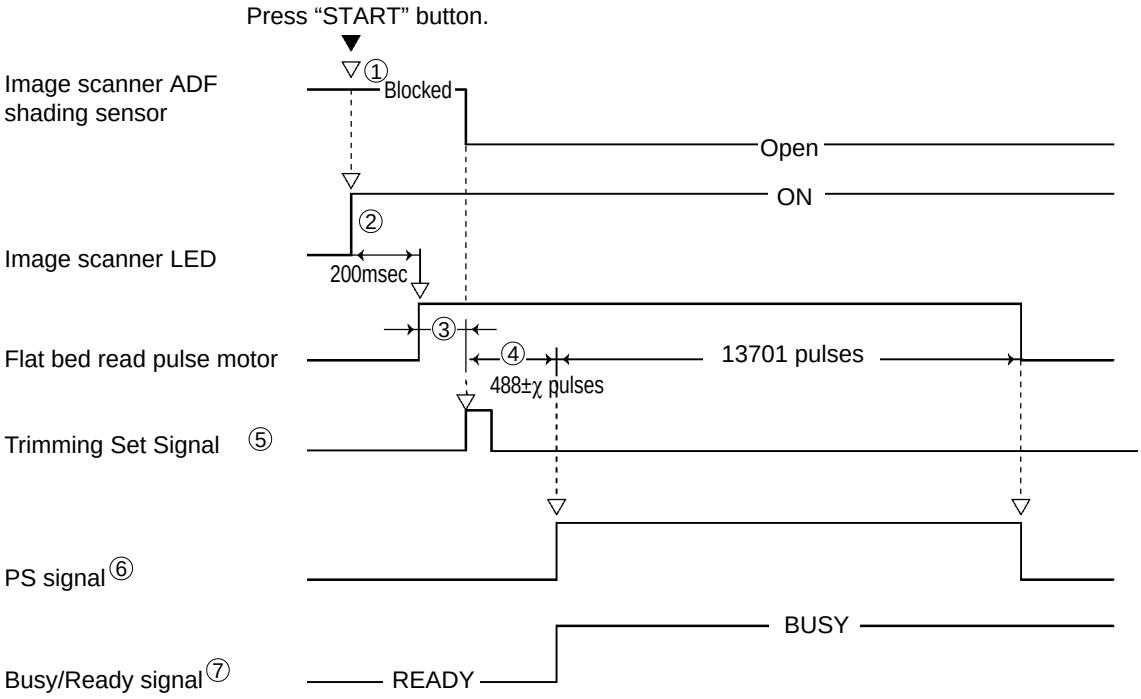
A: Flat bed read pulse motor
B: Image scanner ADF shading sensor
C: Image scanner
D: Original stopper
E: Original
F: Stage glass
G: Glass holder (R)





- Timing Chart -

Pre-Scanning System - With Book Processing Feature & Without ADF



① If the Image scanner ADF shading sensor is not detecting the bracket of the Image scanner, the Image scanner is moved to the ADF shading position to set the Image scanner ready for the pre-scanning process.
② The Shading compensation is made automatically when the LEDs of the Image scanner are turned ON.
③ If the Image scanner has not gone off the Image scanner ADF shading sensor **within 314 pulses** after the Flat bed read pulse motor is activated, it is assumed that the Flat bed read pulse motor has been locked and the error code **[T 15]** is displayed on the operation panel.
④ The"x" pulse can be increased or decreased by Memory switch **No.214**.
⑤ The trimming set signal is the signal to start of trimming. It is output from the Image Processing PCB to the Trimming PCB, clearing the previous trimming data.
⑥ The PS signal is the command to confirm the size of the original, which is output from the Image processing PCB to the Trimming PCB.
⑦ "Busy" signal is output from the Trimming PCB to the Image processing PCB while the Trimming PCB is calculating and confirming the original size.

T15 (Flat Bed Read Pulse Motor Lock)
• Scanner ADF shading sensor not turned off

7. Image Scanning System - With Book Processing Feature & Without ADF

- Basic

After the pre-scanning is finished, the Image scanner starts to scan images.
The Shading compensation is already made at the beginning of the pre-scanning process.

- Start of Image Scanning

When the pre-scanning is finished and the original size is calculated, the Flat bed read pulse motor is activated to move the Image scanner to the right.
When the Flat bed read pulse motor rotates by a given number of pulses, which is given as a result of the original size calculation, the Read & Write start signal is turned ON, leading the Image scanner to start scanning images.
At the same time, the Master making and Master removal processes take place.

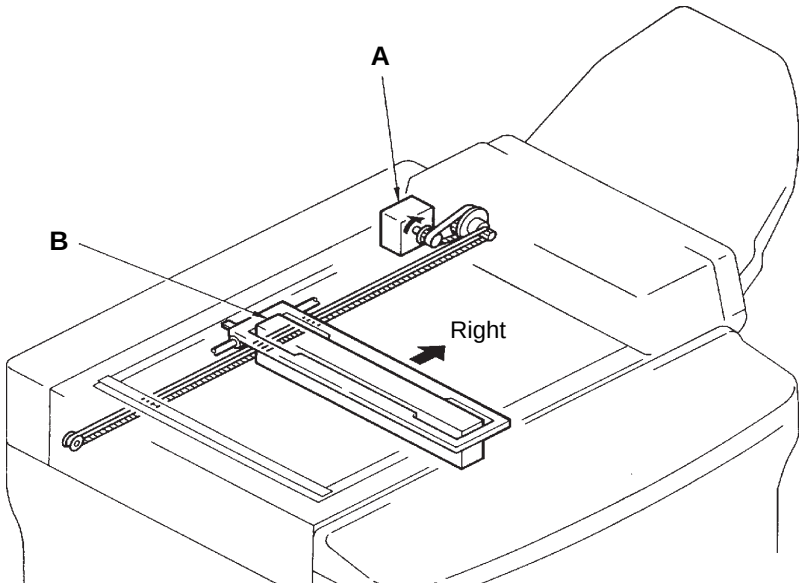
- End of Image Scanning

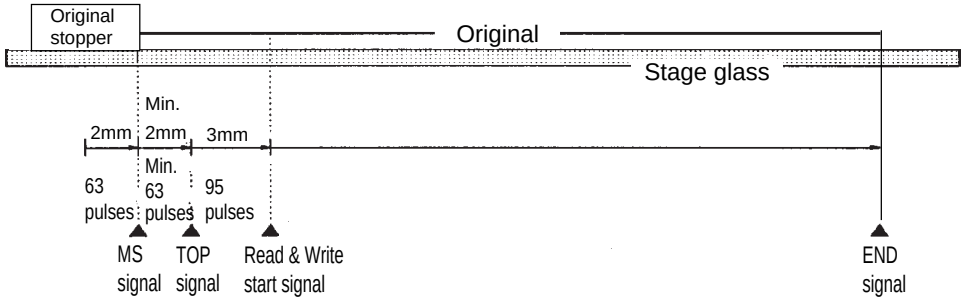
When images are scanned for the calculated size of the original or if a master is made for the size of the paper on the Paper feed tray, the Read & Write start signal and the Flat bed read pulse motor are turned OFF to end the image scanning process.
When the Read & Write start signal is turned OFF, the master making process is also finished and a new-made master starts to be loaded on the Drum after confirming that a used master has been removed completely.

- Return to Home of Image Scanner

200msec after the Read & Write start signal is turned OFF, the LEDs of the Image scanner are turned OFF and the Flat bed read pulse motor restarts rotating to return the Image scanner to the home position for the Book processing feature (at the Image scanner ADF shading sensor).

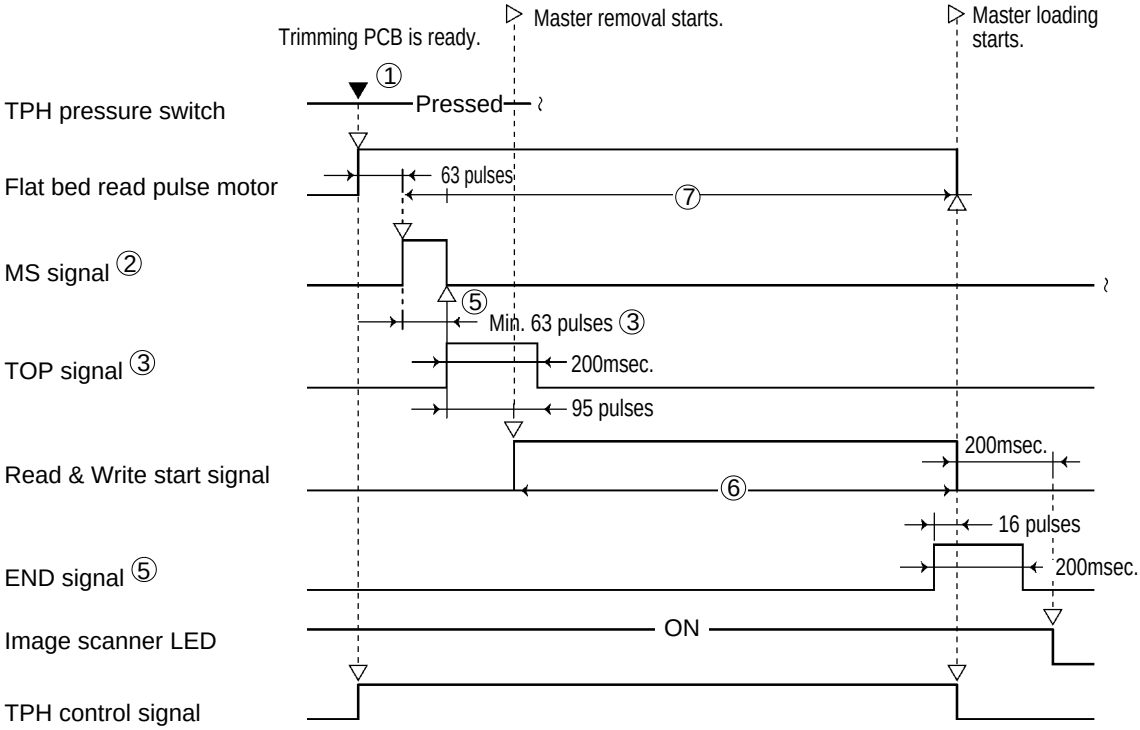
A: Flat bed read pulse motor
B: Image scanner





- Timing Chart -

Image Scanning System - With Book Processing Feature & Without ADF



① The image scanning starts only after the TPH pressure switch is pressed ON.
If the TPH pressure switch is not pressed ON, the Thermal pressure motor is rotated until the switch is pressed.

② The MS signal is the signal to start image scanning, which is output from the Image processing PCB to the Trimming PCB.

③ The TOP signal is the signal to identify the top position of the original confirmed during the pre-scanning process, which is output from the Trimming PCB to the Image processing PCB. The TOP signal is output from the Trimming PCB **63 ~ 158 pulses** after the MS signal is received by the Trimming PCB.
The start position of image writing (master making) is automatically compensated, even though an original is misplaced away from the Original stopper on the Stage glass, if the lead edge remains **within 3mm** from the Original stopper.

④ If the TOP signal has not been output **within 315 pulses** after the the MS signal is output, it is assumed that the Trimming PCB is faulty and the error code **[T 10]** is displayed on the panel.

⑤ The END signal is the signal indicating the tailing edge of the original which is confirmed during the pre-scanning process. It is output from the Trimming PCB to the Image processing PCB.

⑥ If the Write pulse motor has rotated for the size of the paper on the Paper feed tray, the Read & Write start signal and the LEDs of the Image scanner are turned OFF even before the END signal is output.

⑦ After the MS signal is output, if the END signal has not been output **within 13701 pulses** after the Flat bed read pulse motor is activated, the Read & Write start signal and the LEDs of the Image scanner are turned OFF, and a new-made master starts to be loaded on the Drum.

T10 (Image Processing PCB)
• TOP Signal not turned ON from Trimming PCB

MEMO

REMOVAL & ASSEMBLY

1. Stage Glass

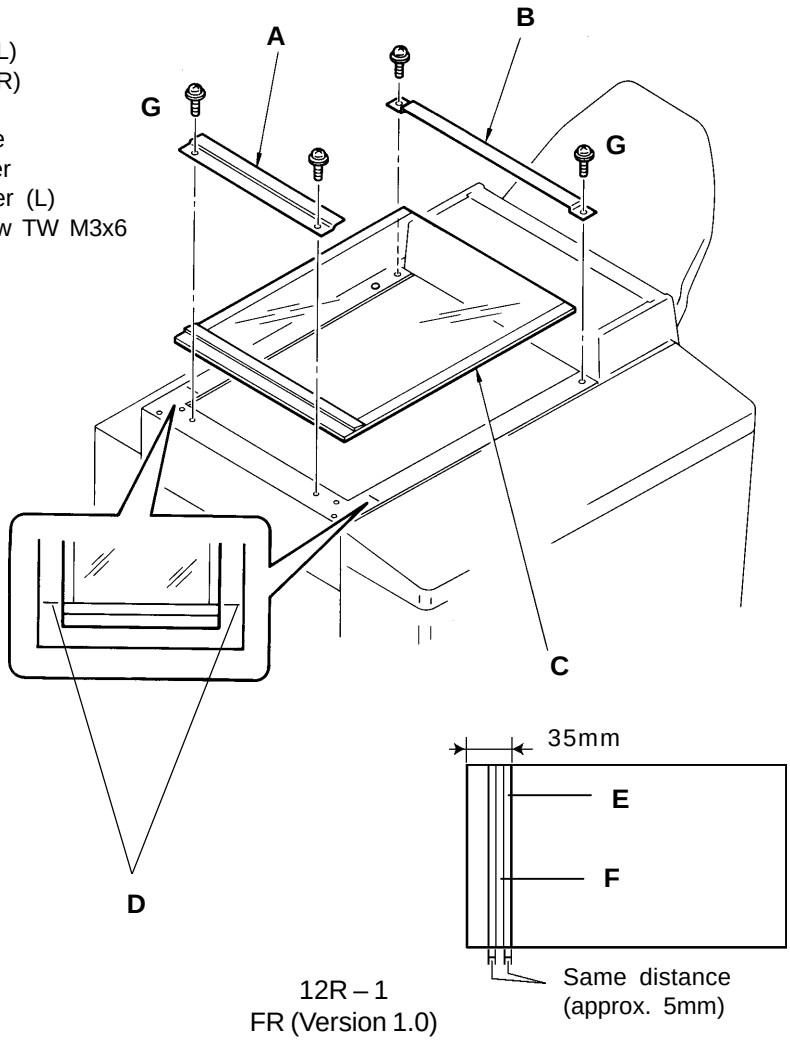
< Removal Procedure >

1. Turn OFF the power and remove all Scanner covers (front, rear, right and left).
   [Note]
   If the machine is equipped with the ADF unit, remove the FB-ADF covers (F) and (R).
2. Remove two screws each from the Glass holder (L) and Glass holder (R), and remove these two Glass holders.
3. Lift and remove the Stage glass.

- Precautions in Assembly -

- When placing the Stage glass back on the machine, touch the edges of the glass and their extended lines with the frames of the positioning lines on the Scanner table frame, as shown below.
- Do not scratch, stain or damage the Shading plate attached underneath the Glass holder (R).
- When replacing the Original stopper and Shading plate (L) underneath on the Stage glass, attach them on the Stage glass as shown in the figure below.
- Check the scanning start position after assembly (Page12A-1)

A: Glass holder (L)
B: Glass holder (R)
C: Stage glass
D: Positioning line
E: Original stopper
F: Shading stopper (L)
G: Pan-head Screw TW M3x6



2. Image Scanner

< Removal Procedure >

1. Turn OFF the power and remove the Stage glass, referring to the previous page.
2. Shift the Image scanner to reach mounting screws.
3. Remove the mounting screw on the Image scanner wire stand.
4. Disconnect the Image flexible wire from the Image scanner.
5. Remove four mounting screws on the Image scanner, and take out the scanner from the Image scanner carriage, lifting it upward gently.

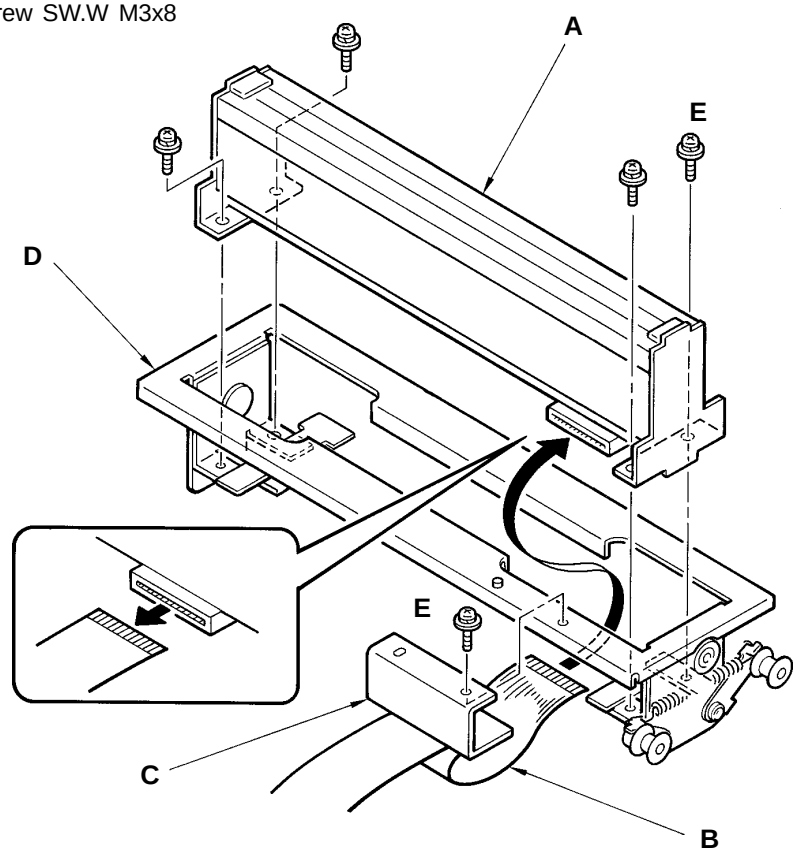
- Precautions in Assembly -

- Confirm that the Image scanner is installed in the Image scanner carriage, parallel to the Scanner table frame.

- Adjustments after Assembly -

- FB Scanning start position(Page 12A-1)
- ADF Scanning start position(Page 13A-2)

A: Image scanner
B: Image flexible wire
C: Image scanner wire stand
D: Image scanner carriage
E: Pan-head Screw SW.W M3x8



3. Image Scanner Carriage

< Removal Procedure >

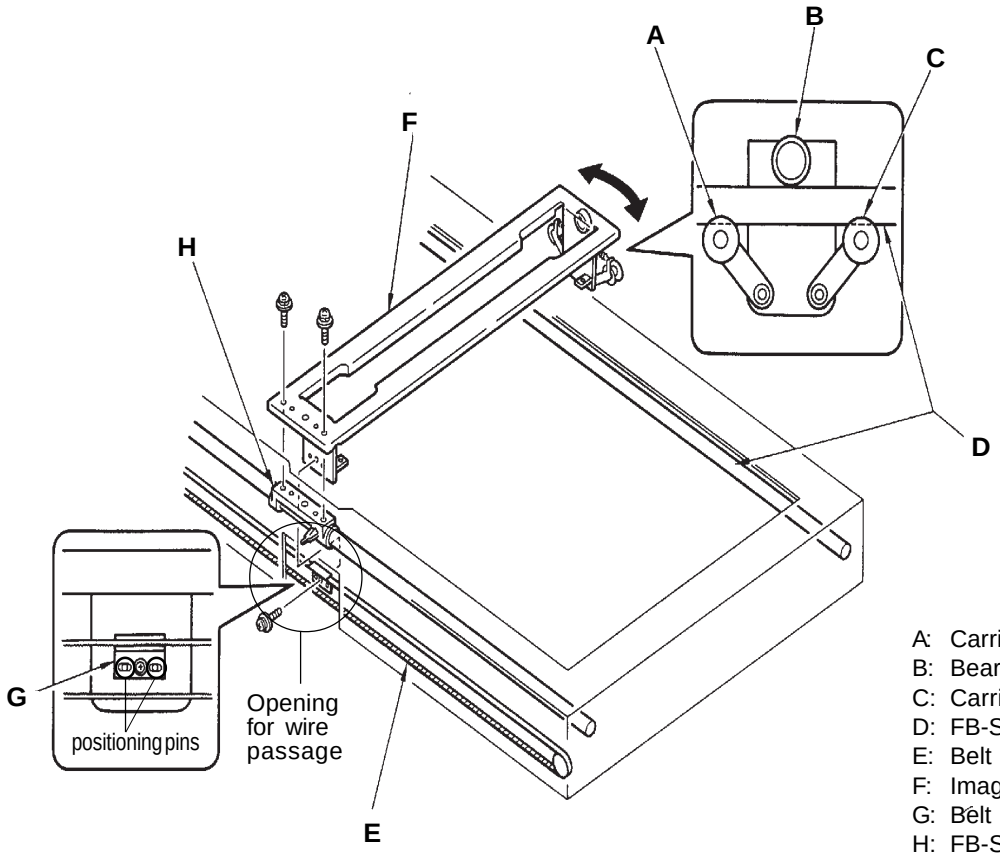
1. Turn OFF the power and remove the Image scanner, referring to the previous page.
2. Shift the Image scanner carriage to the position about at the middle of the Scanner table, where the Scanner table frame is cut to pass the Image flexible wire.
3. Remove the mounting screw on the FB-Scanner belt stand plate and free the plate from the Image scanner carriage.
4. Remove two mounting screws on the Image scanner carriage and separate the carriage from the FB-Scanner slide guide.
5. Gently rock the other end of the Image scanner carriage on the panel side horizontally and free two Carriage guide wheels from the FB-Scanner slide shaft to take out the carriage from the Scanner table.

- Precautions in Assembly -

- Match the positioning pins on the Image scanner carriage with positioning holes on the FB-Scanner belt stand plate when attaching the belt stand plate onto the carriage.
  The positioning pins can be located at any part of the holes.

- Adjustments after Assembly -

- FB Scanning start position(Page 12A-1)
- ADF Scanning start position(Page 13A-2)



A: Carriage guide wheel
B: Bearing
C: Carriage guide
D: FB-Scanner slide shaft
E: Belt
F: Image scanner carriage
G: Belt stand plate
H: FB-Scanner slide guide

4. Flat Bed Read Pulse Motor

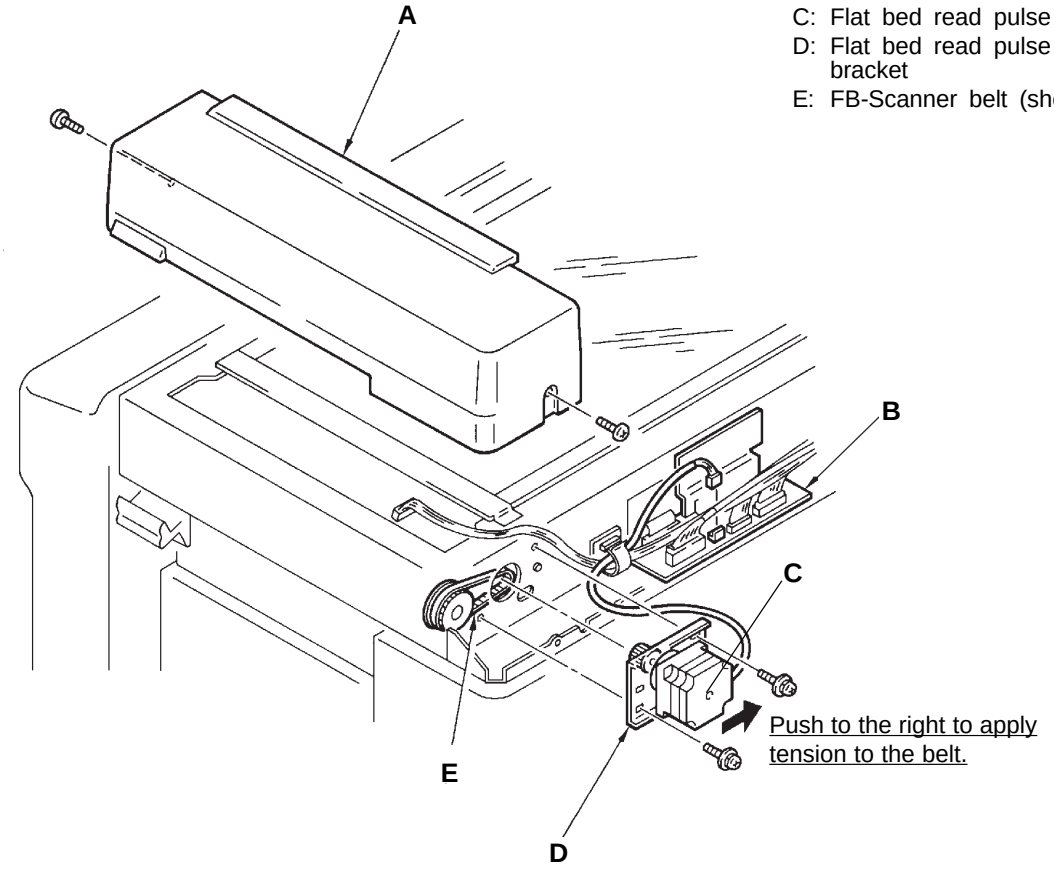
< Removal Procedure >

1. Turn OFF the power, and remove the FB-Scanner cover (right) by removing two mounting screws.
   [Note]
   If the machine is equipped with FB-ADF unit, remove the FB-ADF unit.
2. Remove two mounting screws of the Stage cover, and remove the Stage cover.
3. Unplug the connector of the Flat belt read pulse motor from **CN3** of the **Flat bed PCB**.
4. Remove two mounting screws on the Flat bed read pulse motor bracket, and remove the motor from the Scanner table frame together with the bracket.
5. Remove two mounting screws of the Flat bed read pulse motor and separate the bracket from the motor.

- Precautions in Assembly -

- When securing the motor, tighten the mounting screws, pushing the motor to the right to apply enough tension to the FB-Scanner belt (short).
- Make sure to match the positioning pins on the Scanner table frame into the positioning holes of the Flat bed read pulse motor bracket.

A: FB-Scanner cover (right)
B: Flat bed PCB
C: Flat bed read pulse motor
D: Flat bed read pulse motor bracket
E: FB-Scanner belt (short)



5. FB-Scanner Belts

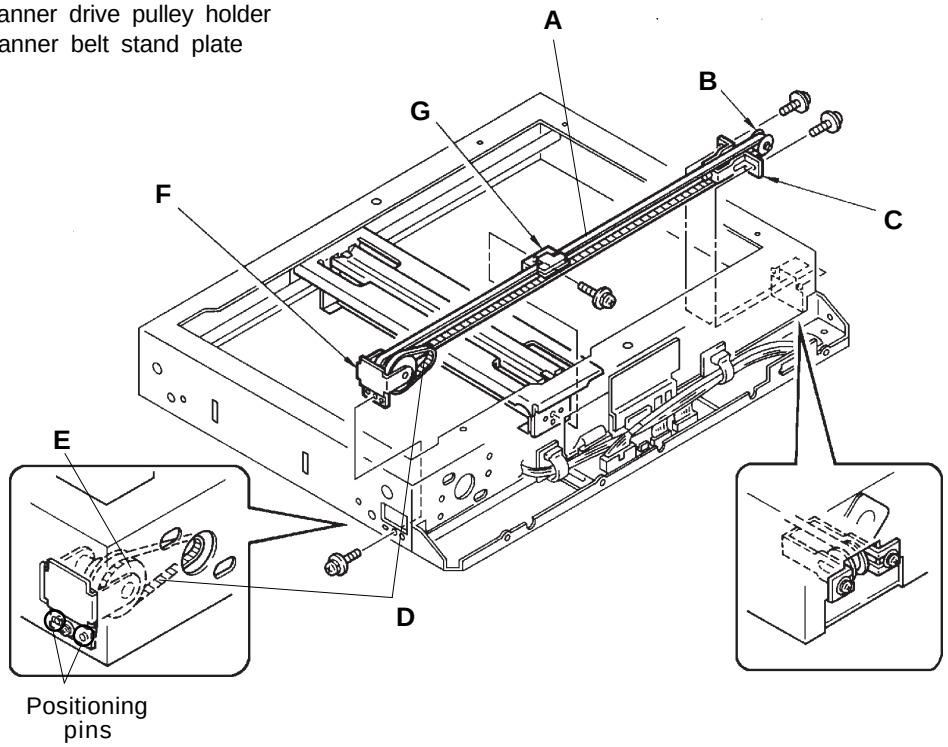
< Removal Procedure >

1. Turn OFF the power, and remove the FB-Scanner cover (right) by removing two mounting screws.
   [Note]
   If the machine is equipped with the ADF unit, remove the ADF unit and FB-ADF cover (right).
2. Remove the Stage glass.
3. Remove the Flat bed read pulse motor.
4. Remove the mounting screw of the FB-Scanner drive pulley holder and separate the holder from the Scanner table frame.
5. Remove the mounting screw of the FB-Scanner belt stand plate to free the plate from the Image scanner carriage.
6. Remove two mounting screws on the FB-Scanner tension holder, and disengage the long FB-Scanner belt from the pulley of the tension holder.
7. Remove the securing screw on the FB-Scanner belt stand plate and separate the plate from the long FB-Scanner belt.

- Precautions in Assembly -

- Match the positioning pins on the Image scanner carriage with positioning holes on the FB-Scanner belt stand plate when attaching the belt stand plate onto the carriage.
  The positioning pins can be located at any part of the holes.
- Match the positioning pins on the FB-Scanner drive pulley holder with the positioning holes on the Scanner table frame.

A: FB-Scanner belt (long)
B: Pulley
C: FB-Scanner tension holder
D: FB-Scanner belt (short)
E: FB-Scanner drive pulley
P: FB-Scanner drive pulley holder
G: FB-Scanner belt stand plate



Flat bed PCB LED 1 Flat bed original detection sensor
– Light up when reflected light detected
Test Mode No.51 Stage cover sensor
– Short interval beeps when light path is blocked
No.52 Flat bed original detection sensor
– Short interval beeps when reflected light detected
No.79 Image scanner LED lighting

6. Image Flexible Wire

< Removal Procedure >

1. Turn OFF the power and remove the Stage glass.
2. Remove the Image scanner wire stand from the Image scanner, disconnect the Image flexible wire from the Image scanner.
3. Remove five mounting screws each of the rails to remove both rails.
4. Remove five mounting screws on the Image flexible wire cover plate, and remove the plate.
5. Disconnect the Image flexible wire from the Flat bed PCB.

- Precautions in Assembly -

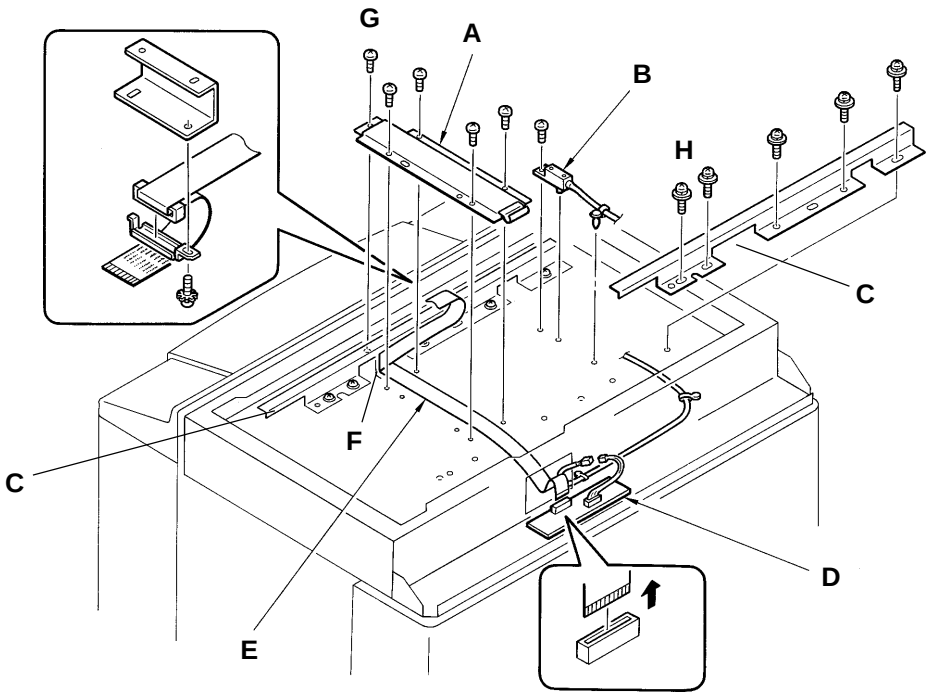
- Secure the bent portion of the Image flexible wire to the guideline-marked position on the bottom plate of the Scanner table, meeting the side edge of the wire with the guide line.

7. Flat Bed Original Detection Sensor

< Removal Procedure >

1. Turn OFF the power and remove the Stage glass.
2. Remove the mounting screw on the Flat bed original detection sensor.
3. Unplug the connector of the sensor just before the Flat bed PCB and take out the sensor.

A: Wire cover
B: Flat bed original detection sensor
C: Rail
D: Flat bed PCB
E: Image flexible wire
F: Positioning line
G: Bind-head Screw M3x4
H: Bind-head Screw M3x6



ADJUSTMENT

1. Scanning Start Position

(1) When Scanning on the Stage Glass (Without the Book procesing feature)

1. Place a ruler with scales engraved from the top edge on the Stage glass, against the Original stopper as shown on the sketch below, and close the Stage cover.
2. Select the PHOTO mode by LINE/PHOTO button and make a master and then print.
3. Check the print and confirm that the top **5±2mm** of the scale is erased on the print.
4. If more or less is erased, use Memory SW **No.213** to make the correction.
5. Press the PRINT POSITION button to select a Memory switch setting referring to the chart on next page.
   For instance, if Memory switch setting number **4** needs to be selected, press the PRINT POSITION button to move the number up or down until the display shows **4 213**.
6. Press the **STOP** button and then the **ALL RESET** button to input the selected number. The panel display returns to an ordinary indication.

SW setting	9	A	B	C	D	E	F	O
Amount (mm)	-2.8	-2.4	-2.0	-1.6	-1.2	-0.8	-0.4	0
SW setting	1	2	3	4	5	6	7	8
Amount (mm)	+0.4	+0.8	+1.2	+1.6	+2.0	+2.4	+2.8	+3.2

← Skip Amount →
(Use the PRINT POSITION key to adjust)

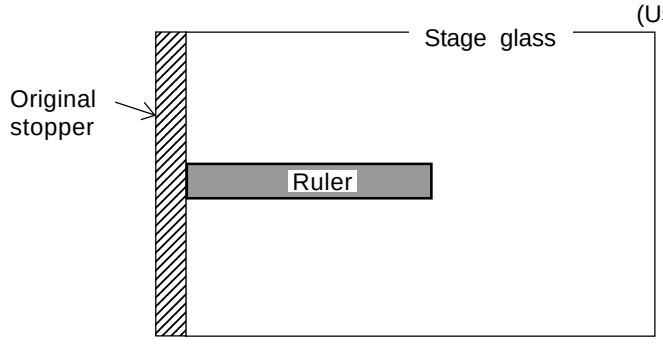
(2) When Scanning on the Stage Glass (With the Book procesing feature)

1. Erase top **3mm** of the ruler with a white correction fluid and place it on the Stage glass, against the Original stopper, and close the Stage cover.
   The **top 3mm must be erased white** to make "white margin" for this adjustment to work properly.
2. Select the PHOTO mode by LINE/PHOTO button and select BOUND BOOK CENTER mode (does not matter if it is Photo or Erase), and make a master and then print.
3. Check the print and confirm that the **5±2mm** of the ruler from its top is erased on the print.
4. If more or less is erased, use Memory SW **No.214** (Test mode No.82) to make the correction.

At Book Mode

SW setting	9	A	B	C	D	E	F	O
Amount (mm)	-1.4	-1.2	-1.0	-0.8	-0.6	-0.4	-0.2	0
SW setting	1	2	3	4	5	6	7	8
Amount (mm)	+0.2	+0.4	+0.6	+0.8	+1.0	+1.2	+1.4	+1.6

← Skip Amount →
(Use the PRINT POSITION key to adjust)



2. Horizontal Scanning Position

- When Scanning on the Stage Glass

1. Place **Test chart** on the Stage Glass, against the Original stopper.
2. Make a master at **[1:1]** size and make prints.
3. Check if all "e" marks on both sides of the test chart original appear on the master on the Drum.
4. If not, adjust the horizontal scanning position by Memory SW **No.212**, referring to the chart below.
5. Press the PRINT POSITION button to select a desired Memory switch setting referring to the chart below.
   For instance, if Memory switch setting number **9** needs to be selected, press the PRINT POSITION button to move the number up or down until the display shows **9 212**.
6. Press the **STOP** button and then the **ALL RESET** button to input the selected number.
   The panel display returns to an ordinary indication.

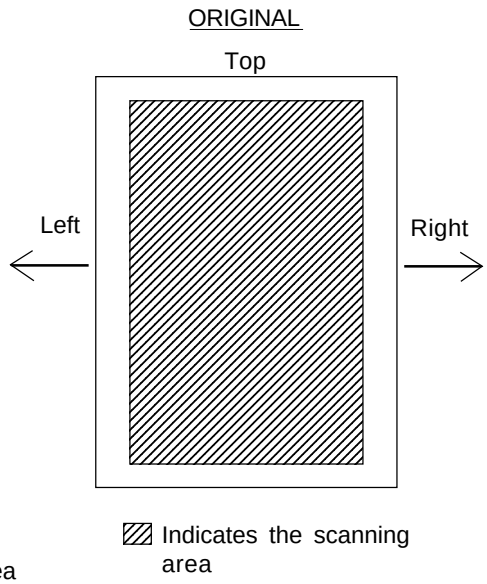
[IMPORTANT]

If "e" marks on both sides are missing in a large area, check the installation position of the **Paper size potentiometer** under the Paper feed tray, and the **Master making width adjustment**.

SW setting	Amount (mm)
9	-3.5
A	-3.0
B	-2.5
C	-2.0
D	-1.5
E	-1.0
F	-0.5
0	0
1	+0.5
2	+1.0
3	+1.5
4	+2.0
5	+2.5
6	+3.0
7	+3.5
8	+4.0

The scanning area shifts to the left.

The scanning area shifts to the right.



(Use the PRINT POSITION key to adjust)

3. Image Elongation/Shrinkage Correction

- When Scanning on the Stage Glass (Flat bed read pulse motor speed adjustment).

1. Make a master at **[1:1]** size using **Test chart** and make prints.
2. Compare printouts with the test chart original.
   Check that the difference in image size is **within 4mm** in the area between the top and bottom scaled lines, between the printouts and the test chart original.
3. If it is elongated or shrunk **by 4mm or more**, compared to the original size, select the Memory SW No.211 and use the PRINT Position Key on the operation panel to select a desired memory SW setting number, referring to the chart low.

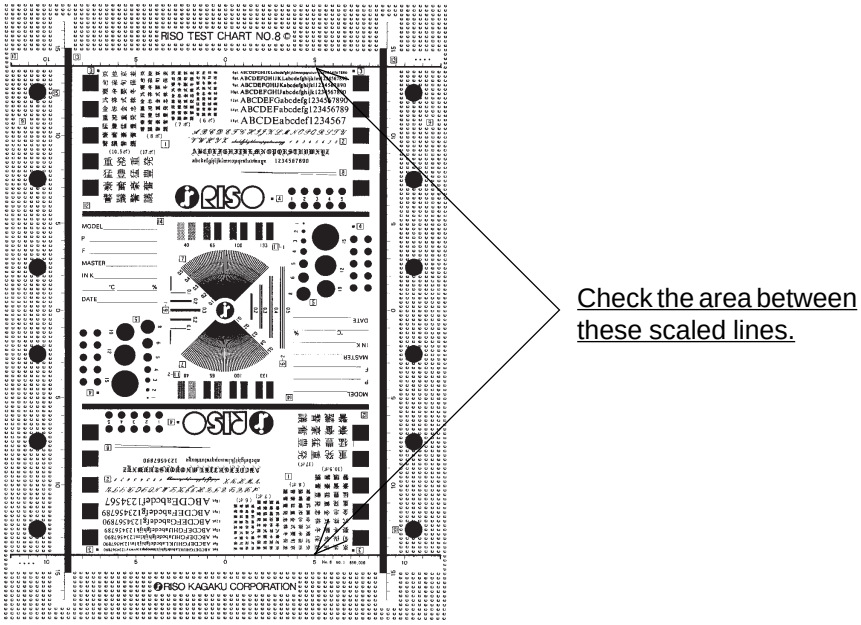
No. 211 FB/R Pulse Motor Speed(Image Expansion) Adjustment

SW setting	9	A	B	C	D	E	F	O
Amount (mm)	-7	-6	-5	-4	-3	-2	-1	0
SW setting	1	2	3	4	5	6	7	8
Amount (mm)	+1	+2	+3	+4	+5	+6	+7	+8

(Use the PRINT POSITION key to adjust)

- Precautions in Adjustment -

- There may be more than one reason for elongation or shrinkage of printed image. Mechanical causes, i.e. backward tension on the master roll, wear of the White roller, loose screw in the pulleys, etc. should also be checked.



[Test Chart No.8]

MEMO